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APPLICANT : SUMITOMO METAL IND LTD;

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TITLE : MANUFACTURE OF HIGHLY CORROSION RESISTANT NI BASE ALLOY

ABSTRACT : PURPOSE: To obtain an Ni base alloy superior in stress corrosion cracking resistance in high temp., high pressure water circumstance by annealing said alloy having a specified compsn., then cold working, next heat treating under a specified condition, further heat treating at just under and above the recrystallization temp.

CONSTITUTION: The Ni base alloy consisting of, by weight, $\leq 0.07\%$ C, $\leq 1.0\%$ Si, $\leq 1.0\%$ Mn, 14~35% Cr, 50~80% Ni, 0.05~1.0% Ti, 0.1~1.0% Al, $\leq 0.15\%$ N and substantially the balance Fe with inevitable impurities is melted and manufactured. Said material is cold worked by $\geq 30\%$ reduction after the annealing, then heat treated at 675~725°C for 3~7hr, to aim the precipitation of Cr carbides and the recovery of Cr lack layer. Next, heated at 770~790°C just under the recrystallization temp. for ≥ 1 hr, if necessary, cold worked by $\geq 30\%$ reduction, then heat treated by one time or more at 805~830°C just above said temp. for ≥ 0.1 hr. In this way, the extremely refining of crystal grains is aimed. The Ni base alloy can be used to steam generator heat transfer tube, etc., in pressurized water reactor.

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